

I claim:

5            1. A method for reading a digital watermark in a media signal comprising:  
assigning sets of media signal samples into classes;  
computing a statistical distribution of the classes; and  
using the statistical distribution to detect or read a watermark in the media signal.

10            2. The method of claim 1 wherein the media signal is an audio signal.

15            3. The method of claim 1 wherein the media signal is an image signal.

20            4. The method of claim 3 wherein the image samples are expressed in a frequency domain.

25            5. The method of claim 4 wherein the image samples are spatial frequency coefficients.

30            6. The method of claim 1 wherein the samples are in a spatial or temporal domain.

35            7. The method of claim 1 wherein using the statistical distribution includes:  
assigning a figure of merit to a sample indicating a likelihood that the sample includes a recoverable portion of a watermark signal; and using the figure of merit in a read operation.

40            8. The method of claim 7 wherein assigning a figure of merit includes assigning a weight to the sample indicating an extent to which the sample is likely to reflect valid watermark data.

9. The method of claim 1 wherein using the statistical distribution includes:  
assigning a figure of merit to a sample indicating a likelihood that the sample  
includes a recoverable portion of a watermark signal; and using the figure of merit in a  
watermark decoding operation.

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10. The method of claim 9 wherein assigning a figure of merit includes assigning  
a weight to the sample indicating an extent to which the sample is likely to reflect valid  
watermark data.

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11. A computer readable medium on which is stored software for performing the  
method of claim 1.

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12. A method for reading a digital watermark in an image comprising:  
assigning transformed samples of the image into classes;  
modeling a statistical distribution of the samples in each of the classes; and  
using the statistical model to decode a watermark from the samples.

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13. The method of claim 12 wherein signal activity of the samples is evaluated  
and the samples are assigned to the classes based on signal activity.

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14. A computer readable medium on which is stored software for performing the  
method of claim 12.

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15. A method for reading a digital watermark in a watermarked signal  
comprising:

assigning sets of samples of the watermarked signal into classes;  
computing a statistical distribution of the samples in each of the sets; and  
using the statistical distribution to decode a watermark from the watermarked  
signal.

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16. The method of claim 15 wherein the sets of samples are assigned to classes based on a signal characteristic of the samples in the sets.

17. The method of claim 16 wherein the signal characteristic is a measure of  
5 signal energy.

18. A computer readable medium on which is stored software for performing the method of claim 15.

10 19. A method for estimating a watermark signal from a media signal suspected of containing the watermark signal, the method comprising:

assigning samples of the suspect signal into classes based on a signal characteristic of the samples;

modeling distributions of the classes; and

15 estimating the watermark signal based on the suspect signal, the distributions of the classes, and a distribution of the watermark signal.

20. A computer readable medium on which is stored software for performing the method of claim 19.

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